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THE STATUS AND MANAGEMENT OF THE PHEASANT POSTED
HUNTING AREAS IN UTAH

by

William G. Parsons

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Wildlife Management

UTAH STATE AGRICULTURAL COLLEGE
Logan, Utah

1953

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William G. Parsons

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INTRODUCTION

Since 1900 the ringneck pheasant Phasianus colchicus torquatus Gmelin has assumed major importance in the United States as an upland game bird. This is particularly evident in Utah where, in 1951, 76,000 hunters bagged an estimated one quarter million pheasants (8).

It is axiomatic that pheasant habitat in Utah is largely confined to land under irrigation. In Utah, this comprises only 2.2 percent of the total land area. These areas, essentially bottomlands along stream courses, are intensively farmed and generally assessed a high valuation per acre. Associated with intensive farming are population centers and resultant concentrations of hunters.

As hunter density increased in Utah, game management problems followed. Landowners were confronted by serious problems of trespass and damage to property. As in other states, landowners posted property with No Trespass signs; in doing so, they substantially reduced the pheasant habitat available to hunters.

In 1939, the Utah State Fish and Game Department sponsored posted hunting areas as a means of re-opening farmland to the hunter. Each of these posted areas was to be organized by landowners and was to comprise 1,000 acres or more of contiguous land. On these areas, the landowners determined the number of hunting permits to be issued; generally the total was based on the desired hunter density.

Since 1939, the establishment of posted areas has rapidly accelerated,

and currently there are 53 areas located throughout the state. A considerable proportion of the available pheasant habitat is encompassed in counties in which concentrations of posted areas occur. In these counties it appears that the privilege of "free hunting" is jeopardized, as many sportsmen are forced to hunt outside the limits of the posted areas on the less productive pheasant lands.

Because human wants are insatiable and because game resources used to satisfy human wants are relatively scarce rather than superabundant, maximum satisfaction demands the development of a management policy in which game is utilized most efficiently. " This study was designed to record and analyze current management of posted areas and perhaps indicate a more efficient utilization of game resources. "

Review of literature

Much has been written concerning pheasant life history and ecology, "but there is little published information about posted hunting areas. It is generally accepted that posted areas have been established to provide protection for landowners from trespass abuses.

The "Williamston Plan," originated in Michigan in 1929, provided cooperative posting of farmlands and admittance of hunters by written permission only (6). Harper, in 1950, reported legal hunting on California areas was allowed if written permission was first obtained from the landowner (11). In 1951, approximately 87 percent of California hunters approved controlled hunting. In 1937, Hicks (14) reported Ohio Wood County Controlled Hunting Plan, begun in 1930, had tended to minimize law violations.

Other investigators of posted hunting areas have published the

results of their observations. In 1951, Greenhalgh (8) indicated approximately 25 percent of the sportsmen hunt on posted hunting areas in Utah. The average number of birds per hunter taken on the areas is the same as the county where the area is located. Zorb (20) recommended that a democratic method of allocating hunter permits be utilized and also that more permits be issued on all lands. Much of the better pheasant land is often included within the posted areas. Whitesell (19) reported that hunter kill on association lands in Wood County, Ohio, was greater than on non-association lands.

Several investigators (2, 6, 11, 14, 18, 19) have concluded that posted hunting areas have been successful in providing protection for the landowners and also have provided increased hunter access to privately owned or controlled lands. However, in Utah, it appears that a more equitable distribution of hunters on non-posted hunting areas and posted hunting areas is desirable. In some counties, posted hunting areas are used by a minority of the hunters while the area encompasses most of the pheasant habitat.

Objectives

The comprehensive study of the posted hunting areas of Utah was designed to provide a sound basis for future recommendations regarding pheasant management. Objectives were to record and analyze: (a) the method of management of the posted hunting areas in Utah, (b) the size of the area, number of licensed hunters permitted on the area, and the relative success of the pheasant posted hunting areas in Utah, and (c) the trend in numbers and distribution of the posted hunting areas in Utah.

Method of procedure

Field work, in determining the manner of management of the posted

hunting areas, included 13 counties of Utah. Exhibit 1 illustrates the 'questionnaire' used in interviews with officials of the organizations. In several instances, it was an impossibility, because of financial limitations, to personally contact officials of all posted areas. As a result, the questionnaire was compared with available data at the Utah State Fish and Game Department in an effort to minimize misleading or erroneous information.

The number of acres in posted hunting areas was determined from outline drawings of the boundaries of areas on large scale state highway maps and also on topographic maps whenever available. In addition, the acreages determined in this manner were checked against those supplied to the Utah State Fish and Game Department by officials of the posted hunting areas.

Measurement of pheasant harvest was made in three ways: (a) distribution to all posted areas of Cache County plus one posted area in each of the remaining counties with the exception of Carbon County of mimeographed 3 x 5 inch index cards with questions relative to the pheasant harvest (Exhibit 2), (b) the regular posted hunting area permits (Figure 2) which included harvest information and were returned to the Utah State Fish and Game Department in limited numbers, and (c) when the sample of hunter permits appeared inadequate, the Department mailed harvest information cards to those hunters who had utilized the posted areas.

Permit stubs (Figure 2) were obtained from approximately 50 percent of the posted areas operating in 1951 and 1952. From these was determined hunter residence and the number of "repeating hunters" or those hunters utilizing the same posted area for hunting in 1951 and 1952.

The results were used as an indication of hunter approval or acceptance of the posted hunting areas as a management tool.¹¹ In addition, as a method of determining the hunter utilization of the posted areas, names of hunters from one area were checked with hunters in all other areas within the county, thereby determining the hunters who utilized more than one posted area during the year in which the survey was conducted.

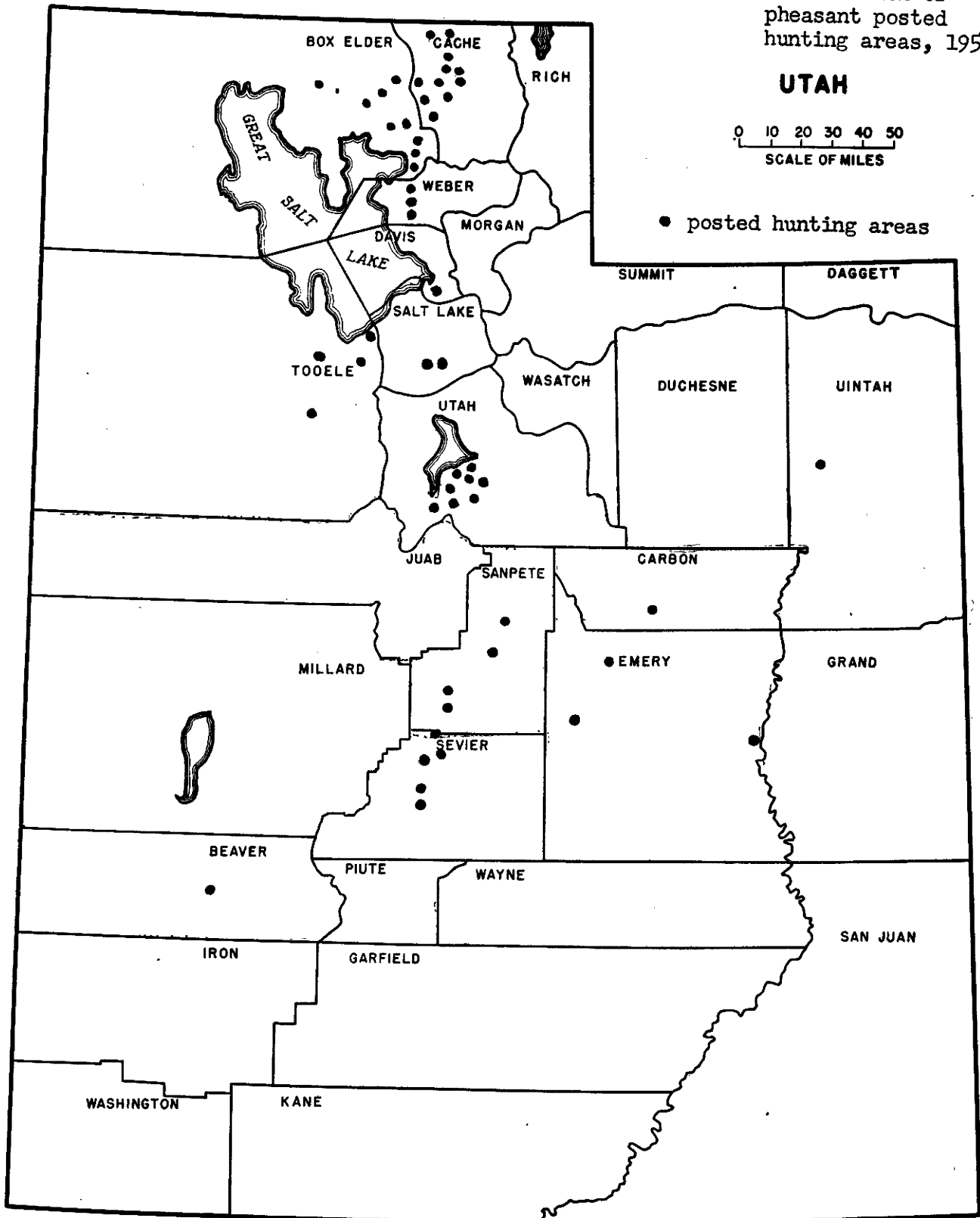
Locations

As seen in Figure 1, posted hunting areas of Utah are widely distributed and are located in 13 of the 29 counties of the state. A relatively high concentration of areas occur in Cache, Box Elder, and Utah counties.

A brief description of land utilization is an important phase of understanding the present and potential pheasant habitat available in counties in which posted hunting areas are located. In 1950, 8.1 million acres of the land area of Utah was devoted to irrigated farming. However, only 1.1 million acres or 2.2 percent of the total land area under irrigation was suitable for pheasant habitat (5). In the main, posted hunting areas include irrigated lands and currently occupy 415,000 acres.¹² The total acreage of irrigated land in Utah has remained relatively unchanged since 1940 but posted hunting areas have tended to increase rapidly in total acreage encompassed during that period.¹³

Urban and rural populations of the 13 counties constitute 88.7 percent of the total population of Utah. In 1952, approximately 85.6 percent of the state pheasant hunting pressure was concentrated in these counties (9).

Figure 1. Distribution of pheasant posted hunting areas, 1952



ESTABLISHMENT OF POSTED HUNTING AREAS

House Bill 39, Posted Hunting Areas, was approved by the Utah Senate on March 15, 1939 and signed by the governor shortly thereafter. This bill authorized the establishment of posted hunting areas and provided penalties for violations (1). The areas are currently identified as pheasant posted hunting areas.

Posted hunting areas are sponsored by church groups (23 percent) and local civic groups plus wildlife federations (77 percent). Generally, the sponsoring group receives a part of the fee collected for the sale of hunter permits on the posted area.

Many posted hunting areas in Utah are delimited in size and location to the wards of the Church of Jesus Christ of Latter Day Saints. Wards normally do not exceed 500 to 800 individuals and exert considerable influence on group effort relative to the management of posted areas. Similar arrangements in other states have facilitated game management practices (19).

The Twenty-fourth Biennial Report of the Utah State Fish and Game Department indicated that posted hunting areas were proving to be a distinct advantage to all (2). At that time, seven posted areas were legally organized and accommodated 2,862 hunters during 1940 and 1941.

The Fish and Game Laws of Utah, 1953-1954, include the following:

When in the judgment of landowners the creation of posted hunting areas will result in protection and propagation of game birds, more satisfactory hunting, greater income to agriculture, greater protection to landowners, and will otherwise be in the public interest, the Commission is authorized,

after giving notice to and an opportunity to be heard by the Wildlife Federation, if any, located in the county where the proposed hunting area is to be created, to issue licenses for the establishment of such areas, when the Commission concludes that it is to the best interest of the game birds that a posted hunting area be created.

Officials of 90 percent of the posted hunting areas interviewed, indicated that the primary objective in establishing posted areas was to eliminate or to effectively control hunter damage to property and livestock. 'Representatives of the remaining 10 percent of the areas indicated that the primary objective was to obtain funds for church and community projects. 'Both types of objectives have been or are being achieved.

ORGANIZATION AND MANAGEMENT OF POSTED HUNTING AREAS

Information of the organizational and managerial methods utilized by posted hunting areas provide a better understanding of the limitations imposed on them by state and local controls. Such information is necessary to make wise recommendations, both present and future, for pheasant and hunter management.

Officials of the posted hunting areas

The organizational structure of the posted hunting areas vary somewhat throughout the state; however, the major officers of each organization are: president, vice president, and secretary. In a number of instances, the positions of vice president and secretary are combined.

Tenure of office varies from 1 to 3 years. Those posted areas with the 3 year term indicate that it is most satisfactory as persons with experience are maintained in office, thus facilitating management and operational procedures of the area.

In the main, the selection of officers is accomplished by a simple majority of landowner members; however, in 3 areas, the Bishop of the L. D. S. Church selects all officers. In these latter areas, all fees collected for hunter permits are transferred to the building fund of the church.

Generally, a candidate for any of the above offices must be a landowner and signed into the posted area organization. However, several areas also require the person to be a member of the Lions Club. This situation exists wherever the Lions Club is the sponsoring organization

of the posted hunting area.

Organization meetings are held several weeks prior to the sale of hunter permits to the general public. Members determined the number of permits to be offered for sale at this particular meeting. In many areas, on completion of the hunt, several members meet to discuss corrective measures for problems that may have arisen during the harvest.

Regulations

Provisions of the Utah Fish and Game Laws, 1953-1954, provide that posted hunting areas may be established by the owners (includes lessee, partner, tenant, share cropper or administrator of land holdings) of contiguous tracts of land aggregating 1,000 acres or more. However, if areas of less than 1,000 acres or areas not entirely contiguous can be feasibly organized into posted hunting areas, landowners may organize. In Utah, in 1952, the smallest area in the state was 2,000 acres and the largest was approximately 47,000 acres. Because of the highways that transect the posted areas, very few are entirely contiguous.

Licenses. Licenses issued by the Commissioner contain the following provisions:

- a. That the licensees shall cooperate with the Fish and Game Commission in propagating and protecting pheasants and other upland birds in such areas.
- b. That the licensees in connection with Fish and Game Commission shall clearly define the boundaries of such hunting areas by conspicuously posting the same with signs to be prescribed and furnished by the Commission.
- c. That the Fish and Game Commission may keep said areas stocked by releasing game birds thereon with the express agreement of the owner or owners of the land.

Posting against hunting. Any landowner controlling property within the general boundary of a posted hunting area may post against hunting.

Signs containing the words, Hunting Prohibited, shall be furnished by the landowner and posted by him at intervals not to exceed 600 feet along the boundary of the areas. It is unlawful for any person to hunt thereon when the land is posted in this manner. In all areas contacted, at least one landowner had posted his property against hunting.

Dissolution of posted area. When in the judgment of landowners the continued existence of posted hunting areas is no longer feasible — resulting or may result in property damage and financial loss, or otherwise disadvantageous to the landowner — the posted area may be dissolved by a declaration signed by a majority of the landowners within the posted area. The declaration shall be forwarded to the State Fish and Game Commission not less than 15 days in advance of the effective date of dissolution. Prior to September 1 of each year, the landowners must submit to the Utah State Fish and Game Commission intentions of operating the posted hunting area (4). If such procedure is not adhered to the posted hunting area is officially dissolved.

Thus far, only four posted areas have been dissolved: one in Duchesne County, one in Davis County, and two in Utah County. Basic information concerning the reasons for dissolution of these areas was not available. However, it appeared likely that dissension within the organization was a contributing factor.

Appointment of persons to issue hunter permits. Generally, 2 to 5 persons per hunting area were appointed by the landowners to issue hunter permits during the hunting season and for a period of not to exceed 30 days prior to the opening date of the season.

Permit to hunt

Figure 2 gives an example of the hunter permit issued for the 1952

pheasant harvest. Such permits, plus a regular game bird license, entitled the purchaser to hunt within the posted area during the hunting season.

NOT TRANSFERABLE	\$1.00	No. 234	No. 234
	1952		
	POSTED HUNTING AREA PERMIT Weber County Unit No. 3--WEST WARREN		WEBER COUNTY Unit No. 3--West Warren
	Name		Name
	Address		Address (To be returned to the Fish & Game Dept.)
This permit must be worn in conspicuous place at all times while hunting on area			
Days Hunted.....Birds Killed..... (Please return to Fish & Game Dept. after hunting)			

Figure 2. Posted hunting area permit, 1952

Determination of permit numbers. Officials of the posted hunting areas submitted requests to the Utah State Fish and Game Commission for the desired number of permits 2 to 3 months preceeding the pheasant harvest.

Table 1 gives a description of the factors which were used by posted areas in determining the number of permits to be sold. Information was based on reports from 31 posted areas located throughout the state. In several instances, a combination of two or more factors was utilized to determine the desired number. Only 32 percent of the posted areas based the desired number of permits on recommendations of the Utah State Fish and Game Department or on the number of pheasants observed by landowners.

Table 1. Factors considered by landowners in determining the number of permits to be sold for posted areas, 1952

Factor	Percent of areas using factor
Number of hunters which can be safely accommodated on the area	39.0
Number of permits sold to hunters in previous pheasant harvests	20.0
Number of pheasants observed by landowners during pre-season period	19.0
Number of permits issued to neighboring posted hunting areas	3.0
Amount of money desired for community projects	3.0
No limit established	3.0

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Eligibility of permittee. Officials of the posted hunting areas indicated that permits were sold to hunters on a first come first serve basis. Normally a hunter is eligible to purchase a permit provided he possesses a game bird license. However, 14 of 27 posted areas in 9 counties maintain a system for reserving permits for landowners signed into the area (Table 2). In these areas, permits are provided to the general public on a first come first serve basis after the reservations of the landowners were satisfied. A method commonly used in determining the number of permits to be reserved for any one landowner was based on the acreage of land contributed to the area. Usually, 1 to 5 permits per landowner are reserved in this manner. On several posted areas, this resulted in only 10 to 15 permits offered for sale to the general public. An area in Box Elder County provided 1 free permit to each landowner member irrespective of land contribution by him.

Table 2 shows that 16.3 percent of 13,211 permits could be reserved for landowners and sold to whomever they desired. Criticism of this practice was particularly evident in Box Elder and Cache counties.

Comparison of hunter permits issued and permits sold. In 1952, 33,160 hunter permits were issued by the Utah State Fish and Game Department to posted hunting areas for sale to the public at \$1.00 each (Table 10). However, in no instance did a group of hunting areas within a county sell all permits issued to them (Figure 3). Outstanding examples included areas in Carbon, Emery, Sevier, and Utah counties which were issued 15,350 permits but sold only 67 percent. In 1952, posted hunting areas sold 23,951 permits which represented a 28 percent decrease from those issued by the Department. Conclusive information of the reason for failing to sell all permits issued was not available. However,

Table 2. Hunter permits reserved for landowners of posted areas during the 1952 pheasant harvest in Utah (Based on information from 27 posted hunting areas)

County location of areas	Number of permits issued to hunters	Permits reserved for landowners	
		Number	Percent
Box Elder	3,181	1,450	45.6
Cache	1,474	740	50.2
Carbon	1,250	175	14.0
Emery	747	35	4.7
Sanpete	177	0	0.0
Sevier	503	0	0.0
Tooele	1,616	66	4.1
Utah	3,492	0	0.0
Weber	771	100	13.0
Total	13,211	2,566	16.3

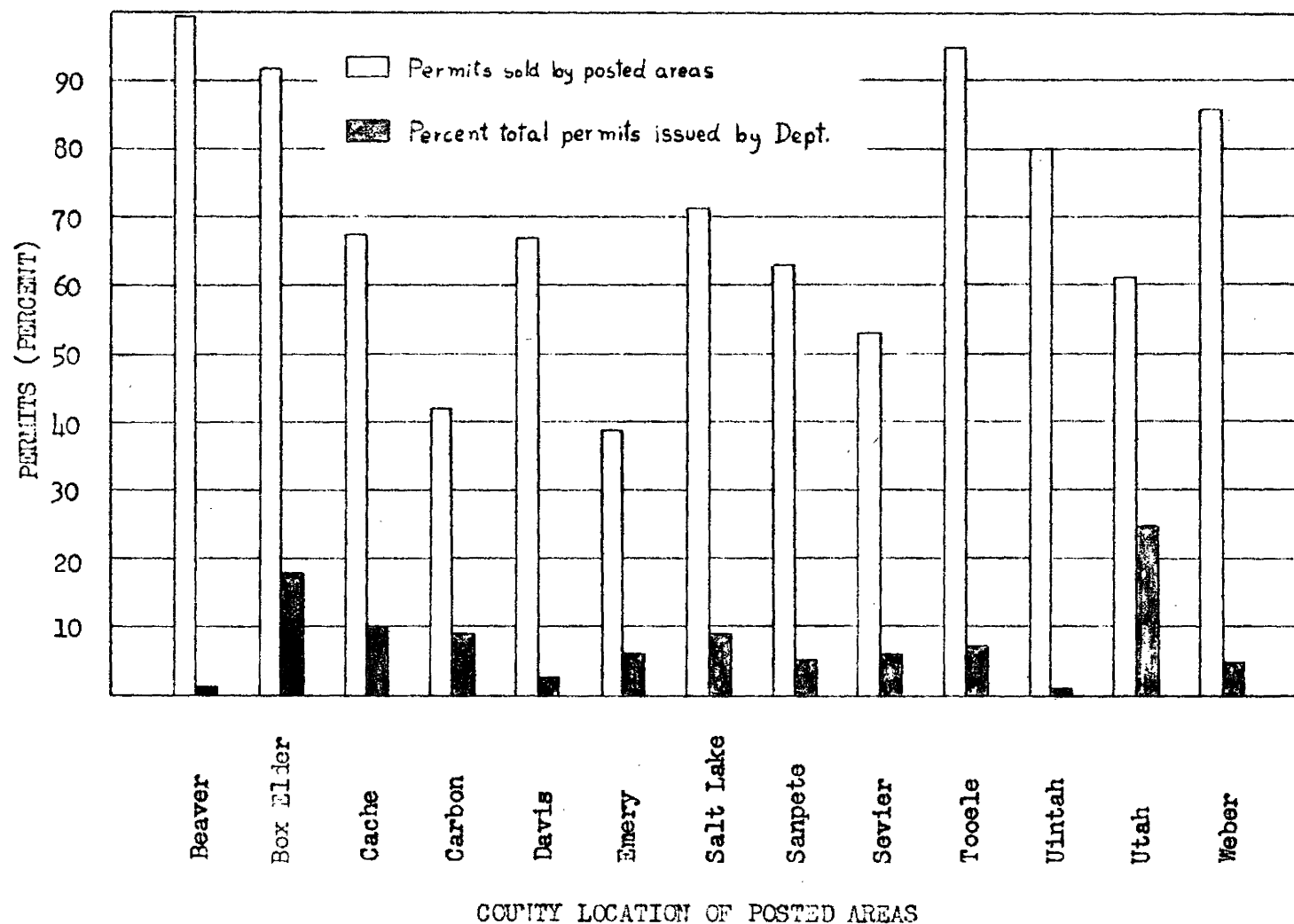


Figure 3. Comparison of hunter permits issued by Utah State Fish and Game Department with those sold by posted hunting areas (Based on 33,160 permits issued by Utah State Fish and Game Department, 1952)

the desired number of hunters on any posted area was apparently the limiting factor for the sale of permits.

Announcement of sale of permits. Approximately 81 percent of the posted hunting areas announced the sale of permits from 1 to 6 weeks preceeding the season. Frequently the announcements were placed in local and state newspapers. In addition, radio announcements were made, particularly in Emery, Sanpete, and Sevier counties. The remaining 19 percent of the posted areas did not make a formal announcement of the sale of permits.

In several counties, Cache and Box Elder, the posted areas have been established a relatively long time and consequently, the location of these areas is generally well known. Therefore, any influence that announcements have on the sale of permits was reduced to a minimum.

Expenditure of fees received from the sale of permits. The expenditure of the income received from the sale of hunter permits has remained unchanged since the establishment of the posted hunting area system in 1939. The Utah State Fish and Game Department assumes no responsibility in collecting or spending the funds received for the permits (2).

Answers from 30 of the posted areas indicate that the disposition of fees was separated into 3 categories: (a) construction and maintenance of church and school projects (playgrounds, recreation buildings, and ward structures), (b) expenses incurred as a result of the operation of the posted hunting area, and (c) deposited in a local bank for future use (not specified). Approximately 73 percent of the areas utilized the first method of disposition of money received and 10 percent of the areas deposited the funds in a local bank.

Cooperative hunting areas in California are permitted to collect a

maximum fee of \$2.00 per day per hunter (11). However, at least 25 percent of the income derived from such fees is devoted to habitat improvement and maintenance, subject to evaluation and approval by the Division of Fish and Game.

While visiting posted areas in Cache County during the 1952 pheasant harvest, the major criticisms by hunters on and off of posted hunting areas was directed toward those areas which did not utilize any income for pheasant management.

Law enforcement

History shows that control of the hunting factor is nearly always the earliest attempt at game management of any area following settlement. Henry VII (1485-1509) was the first English king to recognize that the landowner might wisely be granted protection from trespass. He forbade the taking of pheasants on other persons' land without the permission of the owner; thus developed the first trespass law (15). Controls and hunting restrictions were developed early in the colonization of the United States when trespass abuses became prevalent. In Utah, essentially the same pattern has occurred. In a majority of cases, posted hunting areas developed solely as a means of controlling trespass abuse and as a means of protecting the interests of the landowner.

Posting of land. Before 1953, as provided by law, the signs to be posted on hunting areas were to include a description of the area and an outline of the boundaries and a statement of the fee to be paid to the landowners and name and location within the area of the person or persons selling hunter permits. However, regulations approved by the 1953 legislature, provided only that the name of the hunting area and the permit cost be included (4). Ohio (14) and California (11) provide

such descriptions as presented in the Utah law prior to 1953. Trespass was considerably decreased on posted hunting areas in these states.

Appointment of deputy wardens. Deputy game wardens or commissioners with the power to enforce all game laws and make arrests for violations were appointed by the Utah State Fish and Game Commission. Usually, the choice of deputies was based on the recommendations of the posted hunting area organizations. No compensation was provided the deputies by the state and generally none from the posted area organization. In 1952, 477 deputies were given short-term appointments which expired about 4 days after the pheasant harvest. Information from 32 of the 53 posted hunting areas shows that 1 deputy was available for every 32 hunters utilizing the posted areas (Table 11). Possession of badges by the deputies enhanced patrol work, but at present, the deputies are required to deposit \$5.00 with the Fish and Game Department for the badge. In several instances, this procedure has been responsible for the reduction in number of deputies assigned to a particular area. In lieu of the badge, authorizations on paper are provided but appear to carry less authority and respect.

Method of patrol. A wide variance in methods used to patrol the hunting areas occurred. Many of the deputies assigned to patrol the area participated in the pheasant harvest while on duty. This caused some reduction in efficiency of law enforcement. Most areas are patrolled by deputies on foot and also by deputies assigned to patrol all roads in the area.

When an area was traversed by numerous access roads and main arterials of traffic law enforcement was made more complex and difficult. Illegal entry on such areas was widespread and firearms discharged from automobiles and across roads were especially evident. Such situations

generally arise wherever the population density is great, particularly in Salt Lake, Weber, Davis, and Utah counties.

Patrol activity was extremely active the first two days of the harvest but relatively lax for the remainder of the season. For example, in Cache County, six areas were surveyed to record the patrol activity on the third and fourth days of the season. Checking stations were not manned and deputies were not on duty at any of the posted areas visited. Such situations tend to enhance violations of the trespass law and, in turn, defeat the purpose of the posted hunting area.

Checking stations. Permanent checking stations were located at all major access routes into the posted hunting areas. Usually, the stations were operated by 1 to 2 persons who worked without pay. Total use of the checking stations varied from day to day on some areas with the increase or decrease in hunting pressure. Nearly all checking stations were operative the first $1\frac{1}{2}$ days of the season but few remained operative the full $3\frac{1}{2}$ days of the season. On the last 2 days, hunters were free to enter or leave the area without restriction as the majority of the stations were inoperative.

Primarily, the duty of the checking station personnel was to determine whether hunters possessed the proper permit for the posted area. Few hunters, with the exception of those stopping voluntarily, regarded the stations as check points when leaving the area at the end of the hunting day. California (13) cooperative hunting areas require all hunters to return permits to the checking stations at the end of each day of hunting and, while doing so, provide information of the success on the area. Such information included: number of birds bagged, number

of birds crippled and lost, whether a dog was used, and a report of banded birds killed. These features provided an accurate method of determining actual hunting pressure and success for the posted area.

In several areas, where a main highway crossed the posted area, checking station personnel issued temporary passes to drivers going through the area. Passes were time-stamped and if the driver failed to appear at the outgoing checking station within a reasonable time, deputies were assigned to investigate. Usually one person assigned to the checking station was an authorized deputy warden.

Violations. Officials of the organizations indicated that since the establishment of posted hunting areas, violations of hunting and trespass regulations have been considerably reduced. Chronic violators tended to avoid the actively patrolled posted areas. In Ohio (14), the same trend was noted. However, as mentioned previously, patrol activity was neglected during the last two days of the harvest and violations tended to increase. On those posted areas which reported violations, 20 percent of the areas have prevented violators from purchasing a permit to hunt in subsequent seasons. This procedure also aided in the elimination of trespass abuse.

Release of pheasants

Commencing in 1923, pheasants were propagated and released by the Utah State Fish and Game Department. Annually, 2,500 to 20,000 birds have been released in the state (10, 16). Section 23-5-2 of the Fish and Game Laws of Utah, relative to posted hunting areas, included the following:

. . . that the Fish and Game Commission may keep said areas stocked by releasing game birds thereon with the express agreement of the owner or owners of the land.

However, information provided by the Department in 1952, revealed that the present policy is to avoid releasing pheasants on posted hunting areas. But, in the years 1947 through 1951, at which time the maximum increment of posted areas occurred, a total of 85,022 pheasants were released in counties where posted areas were located (10). This represented 70 percent of all pheasants released in the state. Since the posted areas encompassed approximately 415,000 acres of land in these counties and since the major part was considered pheasant habitat, it was assumed that at least a part of the released birds dispersed to eventually become incorporated into the posted areas. Thus, posted areas have been indirectly stocked in many instances and also directly stocked on several of the areas.

The Director of the Utah State Fish and Game Department (7), indicated every suitable habitat for the pheasant in Utah has been stocked. Emphasis was placed on habitat improvement as a means of maintaining and increasing the present bird population to supply the demand by hunters. Low (16) indicated that emphasis in the state's pheasant program should be placed upon: (a) improvement of the restocking program to assure greater survival of farm-reared pheasants, (b) improvement of the habitat, and (c) investigation of the feasibility of live-trapping and transplanting wild stock from areas of overabundance. Rasmussen and McKean, in 1945, indicated that most of the suitable areas have been colonized and planting of birds in unsuitable areas was a waste of money (18).

The posted hunting area organizations, composed of landowners and managers, generally constitute a closely knit group. Under proper guidance and supervision by game management personnel, landowners could

profitably and effectively participate in a habitat improvement program on posted areas in need of improvement. Such a program would tend to improve relations with sportsmen as well as improve the habitat for pheasants.

Winter feeding

Winter is a critical period for many species of wildlife, including the hardy pheasant. During severe winters, as occurred in Utah in 1948-1949, supplemental feeding is often necessary to prevent serious depletion of the bird population. Winter feeding, to provide the maximum benefit, should be well planned and sustained. Food should be accessible before it is needed, and the supply should be maintained.

Officials representing 20 percent of the posted areas indicated that supplemental food was readily available and distributed whenever deemed necessary by the landowners or cooperating wildlife personnel of the state. Funds to maintain this program were furnished by the Wildlife Federations, local civic groups, and the Utah State Fish and Game Department. Many landowners donate corn and grains and also provide grit when the natural supply fails.

While attending several meetings of the posted area organizations, it was increasingly evident that members were undecided about the most beneficial as well as the most economical winter feed to provide. In addition, type of feeders, method of feeding, and location of feeding stations posed a similar problem. Information, either in the form of literature or lectures, could profitably be disseminated by the Utah State Fish and Game Department.

PHEASANT HARVEST ON POSTED HUNTING AREAS, 1951-1952

Hunter utilization of posted areas

Hunter utilization was based on the number and percent of hunters on posted areas during the 1951 and 1952 pheasant harvests. Addresses on permit stubs provided hunter residence and subsequent utilization of posted areas by 18,500 permit holders. Of the 29 counties in Utah, residents of 21 and 25 respectively, participated in the 1951 and 1952 harvests. In addition, out of state hunters, particularly from California, contributed 0.5 percent and 0.28 percent of the hunter utilization of posted areas in 1951 and 1952 (Table 3).

Table 12 through 23 provide data of the hunter residence on posted areas in 12 of the 13 counties in which posted areas are currently established. Information from the area in Carbon County, established in 1952, was not available.

Table 3 indicates the relative use of posted hunting areas by residents of each county for 1951 and 1952. In 1952, residents of Box Elder, Cache, Salt Lake, and Weber counties contributed 66 percent of the posted area utilization of the state. In 1951, 78 percent of the utilization of the posted areas of the state was supplied by the above counties. However, the decrease can be attributed to the establishment of posted areas in Davis and Tooele which were not included in the 1951 analysis.

A discussion of hunter utilization of posted hunting areas in each county now follows.

Table 3. Residence of hunters utilizing pheasant posted hunting areas, 1951-1952

County of residence	1951 Hunters		1952 Hunters	
	Number	Percent	Number	Percent
Beaver	286	4.65	424	3.42
Bear Elder	1,004	16.33	1,481	11.94
Cache	753	12.25	1,811	14.60
Carbon	12	0.20	275	2.22
Daggett	0	0.00	0	0.00
Davis	180	2.93	399	3.22
Duchesne	8	0.13	10	0.08
Emery	0	0.00	262	2.11
Garfield	0	0.00	4	0.03
Grand	0	0.00	0	0.00
Iron	20	0.33	18	0.14
Juab	18	0.29	16	0.12
Kane	0	0.00	0	0.00
Millard	5	0.08	21	0.17
Morgan	30	0.49	27	0.22
Piute	2	0.03	12	0.10
Rich	2	0.03	32	0.26
Salt Lake	1,072	17.43	2,166	17.46
San Juan	0	0.00	6	0.05
Sanpete	240	3.90	287	2.31
Sevier	109	1.77	811	6.54
Summit	29	0.47	73	0.59
Tooele	21	0.34	985	7.94
Uintah	43	0.70	31	0.25
Utah	309	5.03	461	3.72
Wasatch	5	0.08	9	0.07
Washington	0	0.00	0	0.00
Wayne	0	0.00	14	0.11
Weber	1,970	32.04	2,736	22.05
Out of State	31	0.50	35	0.28
Total	6,147	100.00	12,406	100.00

Beaver County. The posted area at Milford was utilized by approximately 500 hunters during the 1951 and 1952 seasons (Table 12). County residents comprised the major utilization on the area and Salt Lake and Iron counties ranked second and third respectively. A small reduction occurred in 1952 in the percent of Beaver residents who utilized the Milford area. At that time, residents utilized the recently established posted areas in Sevier County.

Box Elder County. The 9 Box Elder County posted areas were utilized by residents of 11 counties of the state and also Alaska, California, and Idaho. Weber and Salt Lake residents maintained a high utilization of posted areas in Boxelder during the 1951 and 1952 seasons. This trend closely paralleled the use reported on non-posted lands of the county (9). As indicated by Table 13, Box Elder residents remained within the county to hunt; a relatively small percent traveled to Cache County posted areas.

Cache County. The 11 Cache County posted areas were utilized by residents of 11 counties of the state and also California (Table 14). In 1951 and 1952, Weber and Salt Lake contributed the major part of the utilization from outside the county. Cache residents tended to hunt within the county but a small number of hunters have utilized areas in Boxelder each season.

Davis County. The posted hunting area, located at Woodscross, was established in 1952; therefore, comparative data for hunter utilization of the area was not available. In 1952, Salt Lake hunters contributed 29 percent of the utilization of the area. Contrary to most trends, Davis hunters, in 1952, utilized many areas in other counties even though the posted area at Woodscross was created in 1952 (Table 15). Davis County hunters were represented in 12 counties of the state in

1952 as compared with 8 in 1951.

Emery County. In Emery County, residents of other counties supplied utilization of the 3 posted areas which exceeded that of county residents (Table 16). Huntington and Ferron, established in 1952, received the bulk of the hunters who were residents of Carbon County. Emery County residents utilized the posted areas of the county and did not participate in the pheasant harvest on posted areas outside the county.

Salt Lake County. Information of hunter utilization was exclusively from the posted area at Draper as the area at Riverton did not provide hunter permit stubs for analysis. Salt Lake County residents participated in the harvest on posted areas of 12 counties, particularly Boxelder, Sanpete, and Tooele counties (Table 17). In 1952, a shift of hunter utilization to areas located in Tooele occurred. A corresponding decline was indicated for utilization of those areas in Box Elder County. Hunters from other counties contributed a very limited use of Salt Lake posted areas.

Sanpete County. Sanpete residents tended to hunt on the 4 posted areas within the county. However, non-resident (outside the county) hunter utilization of the posted areas accounted for more than 50 percent of the hunter utilization. Salt Lake residents again provided the major utilization (Table 18).

Sevier County. A significant decline of hunter utilization by Salt Lake residents occurred in 1952. Residents of 16 counties plus California and Nevada were represented on the 5 posted areas in 1952 (Table 19).

Tooele County. Hunter permit stubs were not available for analysis

of the 1951 harvest; however, those from 3 of the 4 posted areas were represented in the data for 1952. Salt Lake residents contributed approximately one third of the hunter utilization for these areas. Tooele County residents tended to hunt on the posted areas within the county (Table 20).

Uintah County. In 1951 and 1952, residents of Uintah County participated in the harvest on the Randlett area. In addition to the utilization by Uintah residents, the area supported relatively large percent of Salt Lake and Utah county hunters. The hunters from Salt Lake, in 1952, exceeded Uintah hunters by 37 percent (Table 21).

Utah County. Very little information from Utah County posted hunting areas was available for the 1951 and 1952 harvest. However, comparative data is available for one of the 8 areas of the county. In 1952, Salt Lake hunters provided an increase of 13 percent in utilization as compared with 1951. Utilization by Utah County residents declined a comparable amount. Also, county residents increased utilization of posted areas in other counties in 1952, particularly in Sanpete County (Table 22).

Weber County. In 1952, Weber County residents contributed 50 percent of the hunter utilization of those areas in Box Elder County. This represented an increase of 10 percent as compared with 1951. Primarily, the hunter utilization on the 3 posted hunting areas of Weber County was composed of Salt Lake and Davis county residents (Table 23).

Actual hunter utilization on posted areas

An analysis of hunter permits from areas in Box Elder, Cache, Sanpete, Sevier, and Tooele counties, in 1952, indicated that 403 of 8749 or 4.6 percent of the hunters purchased permits for 2 or more posted

hunting areas (Table 4). For example, hunters in Box Elder County purchased permits for 1 to 4 posted areas within the county. This procedure effectively reduces the total number of hunters accommodated on the posted areas of the state. On the basis of total hunters accommodated on the above areas in 1952, a reduction of 5 percent occurred due to those persons purchasing permits for more than one area. An estimated 23,951 permits were sold, in 1952, for all posted areas and an estimated 22,735 persons utilized the areas.

Pheasant habitat available to hunters

Pheasant habitat available to hunters was determined by (1) limits imposed by landowners on the number of hunters desired on the posted areas, and (2) the acreage of pheasant habitat within the county, both on and off of the posted hunting areas.

Hunter density on posted hunting areas. Table 5 presents information of the acreage of land encompassed within posted hunting areas in Utah, in 1951 and 1952. Because of a lack of reliable information, data are not presented for 1 area (Riverton) in Salt Lake County and 4 areas (Genola, Goshen-Elberta, Sunset, and Salem) in Utah County.

Acreage of posted land available to each hunter on posted hunting areas varied from a low of 2.9 to a high of 89.3 acres in Utah and Sanpete County, respectively. In 1951, hunter density on all posted areas appeared comparatively light. An average of 42.7 acres of posted land was available to hunters utilizing posted hunting areas. In 1952, the average density increased to 1 hunter per 30.9 acres; however, the increment can be attributed to areas located in southern Utah which possessed a relatively high density of hunters per acre and were not included in the 1951 data.

Table 4. Individual hunters accommodated on pheasant posted hunting areas in Utah, 1952

Location of posted area	Hunter permits sold	Number of posted areas utilized by individual hunters					Hunters accommodated on posted areas	
		1	2	3	4	5	Number	Percent
		Number of hunters						
Box Elder	3,456	3,212	108	8	1	0	3,329	96.32
Cache	2,113	1,917	94	1	0	1	2,013	95.27
Sanpete	612	578	17	0	0	0	595	97.22
Sevier	1,069	940	60	3	0	0	1,003	93.82
Tooele	1,499	1,275	106	4	0	0	1,385	92.39

Table 5. Acreage of pheasant posted hunting area available to hunters, 1951-1952

Location of posted area	Acreage of posted area	Ave. acres per hunter	
		1951	1952
Beaver Co.			
Milford	26,750	53.5	53.5
Box Elder Co.			
Corinne	12,700	15.8	15.8
Brigham City	5,000	25.0	25.1
Perry	3,127	8.4	8.9
Bothwell-Thatcher & Penrose	47,000	47.0	58.8
Howell	23,374	—	86.9
Fielding	19,500	86.7	84.4
Willard	12,800	25.6	14.8
Harper	3,018	—	15.1
Tremonton	10,000	—	15.6
Cache Co.			
Young Ward	7,100	23.7	40.3
Smithfield	4,500	26.3	23.9
Mendon	6,500	21.7	34.8
Lewiston	5,700	40.1	38.0
Newton	13,560	82.2	77.5
Benson	9,280	27.3	26.6
Wellsville	6,000	20.0	20.0
Hyde Park	3,157	35.9	26.1
North Logan	2,000	—	15.8
Richmond	18,000	63.2	53.7
Cove	5,500	61.8	43.6
Carbon Co.			
Wellington	15,000	—	11.9
Davis Co.			
Woodscross	2,620	—	4.2
Emery Co.			
Greenriver-Elgin	12,000	80.0	56.3
Ferron	10,000	—	40.6
Huntington	2,500	—	8.7
Salt Lake Co.			
Riverton	—	—	—
Draper	5,555	—	15.3

Table 5. (conc.) Acreage of pheasant posted hunting area available to hunters, 1951-1952

Location of posted area	Acreage of posted area	Ave. acres per hunter	
		1951	1952
Sanpete Co.			
Centerfield	13,000	—	26.0
Fayette	13,000	—	72.6
Ephraim	10,539	—	89.3
Mt. Pleasant	3,536	—	20.0
Sevier Co.			
Venice	4,000	—	23.3
Redmond	8,350	—	45.1
Salina	6,500	—	19.6
Aurora	3,414	—	11.4
Glenwood	2,880	—	13.8
Tooele Co.			
Grantsville	6,232	—	6.9
Clover	3,916	—	24.5
Erda	11,000	—	15.7
Lake Point	1,830	—	4.6
Uintah Co.			
Randlett	13,465	66.7	48.8
Utah Co.			
Spanish Fork, Lake Shore, Leland, Benjamin . . .	10,000	—	2.9
Genola	—	—	—
Goshen-Elberta	—	—	—
Sunset	—	—	—
Salem	—	—	—
Weber Co.			
Hooper	6,000	—	10.0
Slaterville	5,120	—	14.6
West Warren	10,000	—	23.8
Total			
	415,073	—	—
Average			
	8,647	42.7	30.9

Hunter density on non-posted land. An estimated 722,922 acres of irrigated land or land suitable for pheasant habitat is located outside the boundaries of the posted hunting areas of Utah. In 1952, an estimated 54,822 hunters utilized this available habitat (9). Since the number of hunters of each county who utilized non-posted land was not available, hunter density was computed on a statewide basis. In 1952, an average of 13.19 acres of non-posted land was available for each hunter. Therefore, comparative hunter density per acre was more than twice as great on non-posted lands as on posted lands.

In 1952, 74 percent of the sportsmen of Utah utilized 61 percent or 722,922 acres of the pheasant habitat that was not included in the posted hunting areas. These data were based on average calculations for the state and in several counties — Box Elder, Cache, and Carbon — a proportionally greater number of sportsmen on non-posted lands were forced to utilize a much reduced habitat. This was due to the acreage of the posted areas exceeding the acreage of the total irrigated land within the county. A more equitable distribution of hunters appeared desirable in these counties.

Acreage of irrigated land in each county. Irrigated lands of Utah are concentrated in those counties in which the majority of posted hunting areas are established. Of the 13 counties, which provided 60 percent of the irrigated land of the state, there was 415,073 acres or 60 percent in posted hunting areas (Table 6).

Since 1944, irrigated land in the state has increased 13,914 acres but in several counties in which posted areas were located there has occurred a reduction of irrigated land. Cache, Carbon, Uintah, Utah, and Weber counties indicated an average reduction of 8 percent irrigated lands since 1944. The annual increment of irrigated lands

Table 6. Acreage of pheasant posted hunting areas by counties, Utah, 1952

County location	Land irrigated (acres)	Land in posted areas (acres)
Beaver	23,483	26,750
Box Elder	126,519	87,542
Cache	74,861	81,297
Carbon	11,153	15,000
Davis	35,051	2,620
Emery	48,597	24,500
Salt Lake ¹	49,499	5,555
Sanpete	75,922	40,075
Sevier	56,306	25,114
Tooele	12,111	23,028
Uintah	66,809	13,465
Utah ²	97,683	10,000
Weber	45,611	21,120
Total	684,628	415,073

- ¹ acreage was not available for the posted hunting area at Riverton
² acreage was not available for the posted hunting areas at Genola, Goshen-Elberta, Sunset, and Salem

was far exceeded by the acreage annually encompassed within posted hunting areas. For example, in 1952, 72,298 acres of land was added to the hunting areas and essentially none added to the total irrigated land of the state.

Hunter success

Hunter success for the 1952 pheasant harvest on posted hunting areas was obtained from three sources: (a) questionnaires issued by the Utah Cooperative Wildlife Research Unit (Exhibit 2), (b) posted hunting area permits which were returned to the Utah State Fish and Game Department, and (c) information obtained from harvest cards sent by the Utah State Fish and Game Department to a 10 percent sample of hunters. Also, hunter success on non posted lands (Table 7) was obtained from the 1951 and 1952 Utah Game Bird Harvest Bulletins (8, 9).

Information was analyzed from questionnaire cards (Exhibit 2) to determine the percent of hunters in the field each successive day of the season and also the percent and average number of birds harvested each day (Figures 4, 5). Hunters of posted areas, in 1952, tended to utilize all areas to the maximum the first 2 days of the season — Saturday and Sunday. The minimum utilization occurred on Monday or the third day of the hunt. However, on the fourth day, a slight increase in the utilization curve was noted. A similar trend was evident in the curves showing the birds harvested per day and also percent of birds harvested per day (Figure 5). Hunter success on the third day was only 40 percent of the birds that were killed the first day. Nearly 75 percent of the total birds harvested for the season were taken by hunters on the first and second days (Figure 5).

In 1951, the average total number of pheasants harvested during the season by each hunter on posted hunting areas exceeded, by 14.6

Table 7. Hunter success on posted hunting areas as compared with hunter success on non-posted lands of Utah, 1951-1952

County	Pheasants per season on posted areas		Pheasants per season on non-posted areas	
	1951	1952	1951	1952
Beaver	3.95	4.91	3.14	2.86
Box Elder	4.31	3.22	4.20	3.86
Cache	4.28	3.34	3.61	3.45
Carbon	—	2.27	—	3.93
Davis	—	2.72	—	2.24
Emery	—	3.87	—	3.52
Salt Lake	2.18	2.08	1.83	2.27
Sanpete	3.65	3.35	3.01	3.37
Sevier	4.29	4.25	3.63	4.62
Tooele	3.25	1.50	1.74	2.09
Uintah	5.16	3.11	4.28	3.81
Utah	2.82	3.18	2.83	3.04
Weber	1.82	2.30	2.25	1.78
Average	3.57	3.08	3.05	3.14

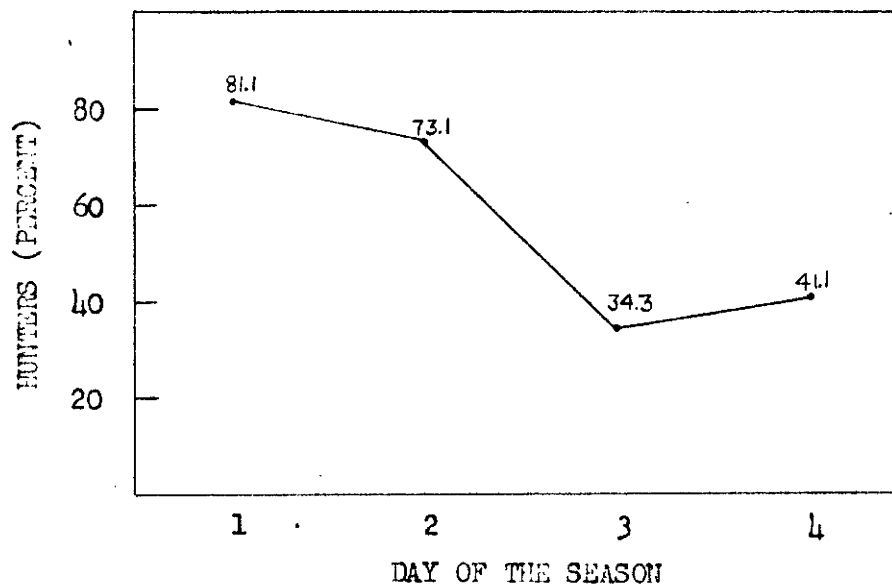


Figure 4. Hunters on the posted hunting areas each day of the season, 1952 (Based on 16 posted hunting areas)

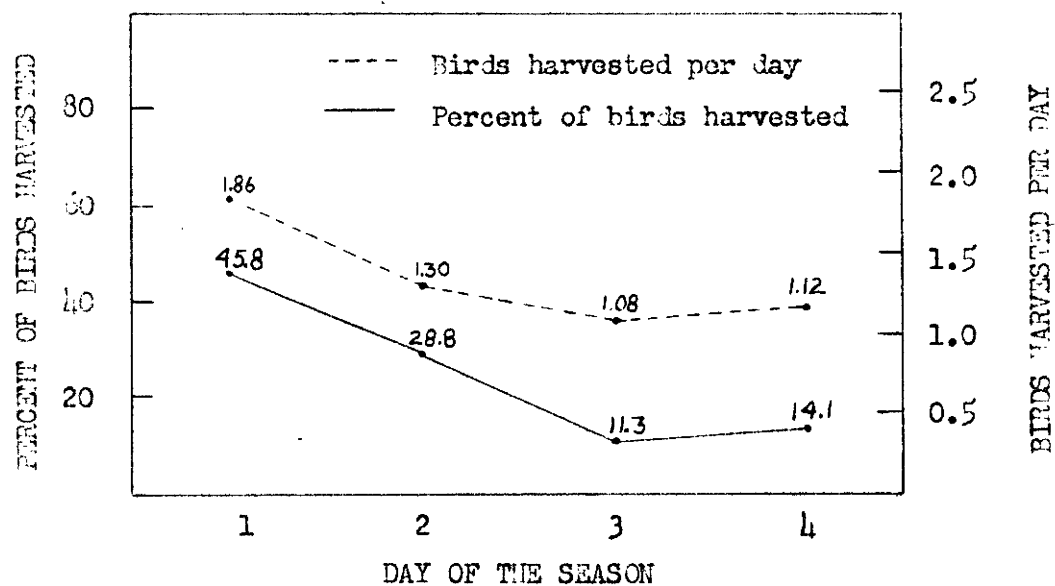


Figure 5. Hunter success on 16 posted hunting areas of Utah, 1952

percent, those harvested on non-posted lands (Table 7). In 1951, the average pheasants per hunter for the season on posted areas was 3.57 birds as compared with 3.05 birds on non-posted lands. However, in 1952, pheasants per hunter on posted land decreased to 2 percent below the pheasants per hunter on non-posted lands. Counties which reported substantial reductions in birds harvested on posted areas included:

<u>County</u>	<u>Percent decline on posted areas in 1952</u>
Beaver	22.0
Box Elder	25.0
Cache	22.0
Tooele	54.0
Uintah	27.0

Approximately 10,000 hunter permits were sold in the above counties and therefore a substantial decline in the total pheasant harvest for the state resulted.

Hunters using dogs on posted hunting areas reported a higher success of pheasants per day in 1952. Those with dogs exceeded the average season kill of those without dogs by 25 percent. Similar results, although less pronounced, were reported for non-posted lands (9). An effort was made to determine the crippling loss of pheasants related to the use of dogs. However, reliable information was not obtained and was, at least in partial measure, due to the reluctance of hunters to supply such information since they believed it would prove disadvantageous to them.

At present, the addresses of hunters are not available to the Utah State Fish and Game Department until officials of the areas return permit stubs to the Department; in many instances, this represents a

delay of 1 to 3 months. When attempting to take a sample of those hunters on the posted areas, there is a probability that, in the interim, the hunter will forget the total number of birds killed as well as those killed on specific days of the season. As an attempt to measure this probability, a telephone survey of hunters in Cache County was conducted in 1952. A group of hunters from one posted area was called immediately after the harvest and questioned as to hunter success on specific days and for the season. The results obtained were believed to be highly accurate. After 3 weeks, another group was selected and questioned in the same manner. Only 20 percent of those questioned recalled the number of birds harvested and 5 percent recalled the days in which the birds were harvested.

In addition to the preceeding method, the reliability of the information from harvest cards was analyzed in 1952. At that time, harvest card results were compared with results obtained from the questionnaire cards distributed by the Utah Cooperative Wildlife Research Unit (Exhibit 2). Harvest success for the state was based on a 10 percent sample. Harvest cards were mailed to the hunters a relatively long interval after the season; whereas, the questionnaire cards were distributed during the hunt. A 35 percent hunter sample with questionnaire cards returned by North Logan hunters indicated that results obtained with harvest cards were 26 percent too high with respect to hunter success. Furthermore, a 25 percent sample of the hunters on the Greenriver-Elgin posted area showed that the hunter harvest card information was high, in this case 25 percent. Therefore, it appears that information of hunter success be obtained as soon as possible after the pheasants are bagged. Otherwise, a group of unreliable data of hunter

success will probably result. Such information would be misleading when formulating future recommendations for pheasant management.

Hunter approval

Early in the history of the posted hunting areas of Utah, the Utah Cooperative Wildlife Research Unit at Logan conducted a census of hunters on the Corinne area with a view to obtaining hunter approval of the posted hunting system. Results showed that 93 percent of the hunters were in favor of continuing the posted areas (18). More than 86 percent of the hunters utilizing California cooperative hunting areas indicated that they approved of the system as organized. On one area unfavorable comment was expressed by more than 50 percent of the hunters. As this area was the single one which charged a fee and all other conditions appeared normal it appeared that the criticism was mainly due to the increased cost of hunting (13).

Since the original survey of the posted area in Utah in 1941, additional census to determine hunter approval have not been conducted. After many hunter and landowner interviews, in 1952, it appeared that acceptance or approval of posted hunting areas was dependent on the desire of the hunter to utilize the same area during successive harvests. As a means of measuring this factor, permit stubs (Figure 2) with the name and address of the hunter included thereon were obtained from 34 percent of the posted areas of the state. Names were then compared with the 1951 and 1952 harvest. A preliminary survey indicated that landowner members were prone to utilize areas of which they were a member irregardless of approval of the hunting system. Therefore, they are not considered in the final analysis.

Exclusive of landowner members, who comprised 16.19 percent of the

"repeating hunters", approximately 1 of 4 hunters, in 1952, utilized the same area as in 1951 (Table 8). An average of 11.73 percent of the "repeating hunters" were residents of the county in which the posted area was located whereas an average of 13.02 percent resided in counties other than the location of the posted area.

Results indicated that the hunters utilizing posted hunting areas of Beaver and Box Elder counties were in favor of the system of management. However, a direct method of determining hunter approval would be more desirable.

Substantial evidence of hunter approval was also provided by a determination of the mileage traveled by the hunter in reaching the posted hunting area. In California (13), in 1950, those hunters not residing in the immediate vicinity of the posted areas comprised a maximum of 90 percent of the total. Such hunters were required to travel a considerable distance to reach the areas, yet 86 percent approved of the method of harvest as set up by the cooperative associations. In Utah, comparative distances travelled by hunters to reach the same posted area in 1951 and 1952 is shown in Table 9. Data from 8 counties in which posted areas were located indicated that hunters travelled an average distance of 104 miles (one way) to use the same area as previously. A range of 15 to 700 miles was indicated. Hunters, who were residents of California, generally travelled the maximum distance to reach the posted areas in Utah.

During the course of field observations and surveys in 1952, the major criticism from hunters on and off of the posted areas was directed toward areas which did not allocate any portion of the fee to a pheasant management program.

Table 8. Hunters, who in 1951 and 1952, utilized the same posted hunting area (Based on 5958 hunters)

County	Percent of hunters utilizing same posted area in 1951 and 1952			Percent of repeating hunters minus landowner members
	Landowner members of posted areas	County resident hunters	Out-of-county hunters utilizing posted areas	
Beaver	10.89	34.64	7.26	41.90
Box Elder	7.34	17.11	18.81	35.92
Cache	37.90	8.97	4.84	13.81
Salt Lake	5.72	24.04	1.14	25.18
Sanpete	13.40	8.63	19.88	28.51
Sevier	29.94	7.64	20.38	28.02
Uintah	11.24	0.00	29.78	29.78
Weber	13.11	16.80	2.03	18.83
Average	16.19	14.73	13.02	27.74

Table 9. Comparative distances traveled by hunters utilizing the same posted hunting area in the 1951 and 1952 pheasant harvest in Utah

County location of posted area	Number of out-of-county repeating hunters	Miles traveled (one way)	
		Average	Range
Beaver	26	211	50 - 560
Box Elder	410	34	25 - 180
Cache	41	61	35 - 210
Salt Lake	3	38	20 - 70
Sanpete	129	125	35 - 700
Sevier	32	137	15 - 160
Uintah	53	178	110 - 220
Weber	27	46	45 - 70

THE TREND IN ESTABLISHMENT OF POSTED HUNTING AREAS

At present, 53 posted hunting areas are established in 13 of the 29 counties of Utah. More than 415,000 acres of land, essentially pheasant habitat, is encompassed in these areas.

Increased number and acreage of posted hunting areas was relatively slow during the period of 1939 through 1947 (Figure 6). For example, in Box Elder County, the posted areas of Corinne and Brigham City, established in 1939 and 1941 respectively, encompassed 18,000 acres of land. These were the only areas in the county until 1949. From that date to the present, 7 additional areas of 118,000 acres have been established. The same general trend was noted for Cache County. From 1948 to the present time, 8 areas of approximately 64,000 acres have been created.

Reasons for the impetus and subsequent establishment of the majority of posted areas in the last 5 years have been attributed to increased hunter trespass and the desire of the landowners to control it. For example, Young Ward of Cache County, the first posted hunting area established in the county, limited the number of hunters on the area that was posted. Hunters, who had utilized this land before the creation of the posted area, migrated to the pheasant habitat in the proximity of Mendon. This influx of hunters added to the trespass abuse in the area. In an effort to control this factor, landowners established a posted hunting area at Mendon. The same general pattern was noted throughout Cache County and was believed to be representative of conditions in other counties in which major increases in establishment of posted hunting areas

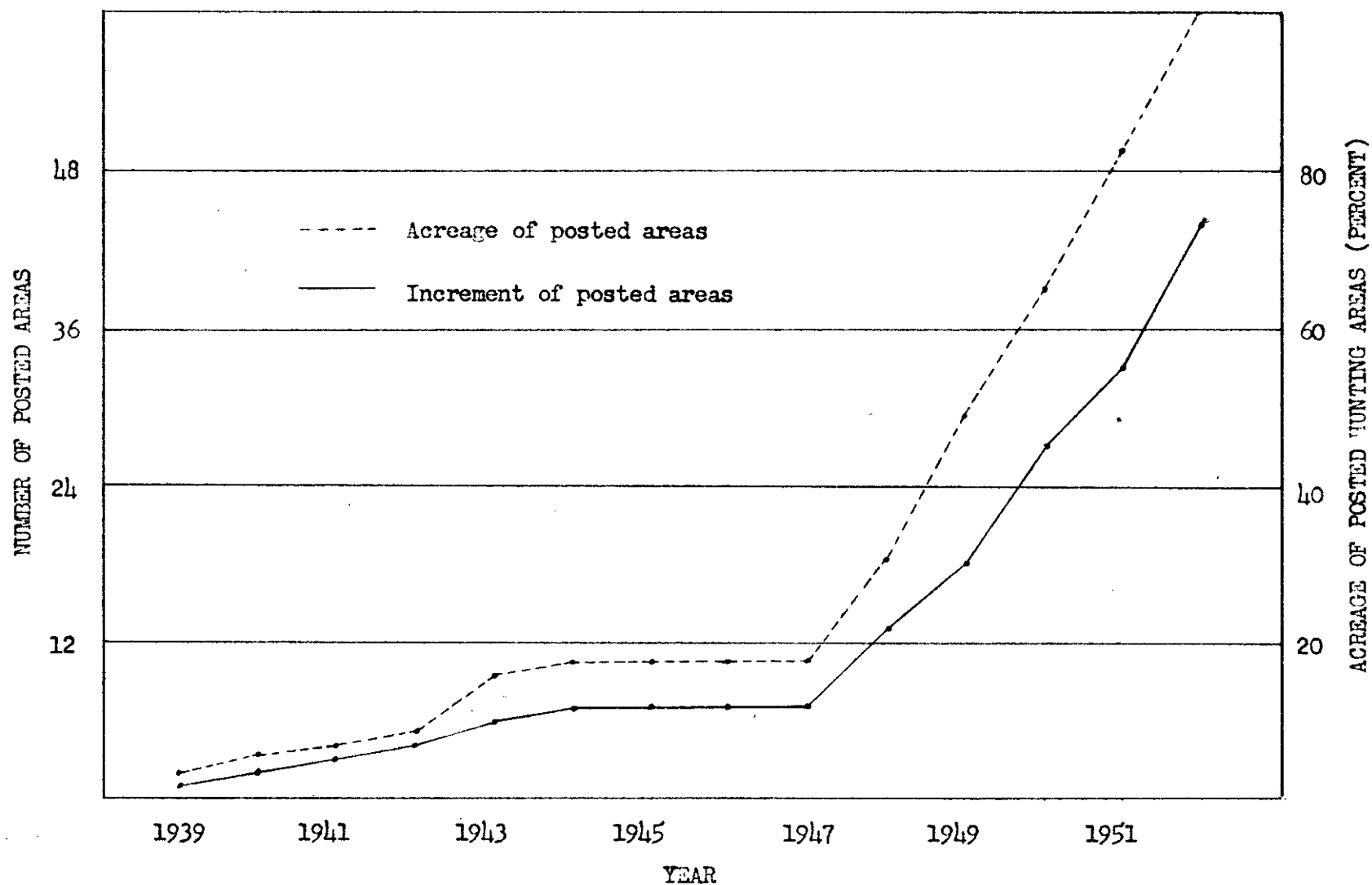


Figure 6. Trend in establishment of posted hunting areas in Utah (Based on 44 areas of 415,073 acres)

have occurred during the past 5 years.

An additional factor contributing to the increased establishment of the areas can be related to the ethics of the individual hunters of the county. For example, many representatives of the posted hunting areas indicated that since the creation of the areas a more considerate group of hunters utilized the land. Hunters who had little regard for the property rights of the landowners tended to avoid the posted areas as many were actively patrolled. These hunters were then forced to hunt outside the area and tended to overcrowd surrounding lands. Again in an effort to protect their interests, landowners which were subjected to this influx of inconsiderate hunters established posted hunting areas. On a whole, these two factors have been primarily responsible for the "snowballing" effect in the increase of the posted hunting area system in recent years.

Apparently, as determined by interviews of landowner members of the posted areas, an objection would be raised if an attempt was made to curtail the posted hunting area system. Continued increase in number of areas and acreage of pheasant habitat encompassed in posted areas appears highly probable in Utah.

RECOMMENDATIONS

1. Limit each landowner member of the posted hunting area to 2 permits per season. At present a number of areas, particularly in Ben Hilder and Cache counties, reserve 45 to 50 percent of the hunter permits for landowner members to sell to their friends and associates.

2. Allocate 25 percent or a given fraction of fees collected from hunter permit sales to projects that will improve pheasant management on the posted areas; the projects to be supervised by game management personnel.

3. When winter feeding appears necessary to maintain the pheasant stock, responsible agencies distribute literature or provide demonstrations of the techniques involved in winter feeding. Emphasis should be placed upon types of feed, types of equipment, and location of feeding stations.

4. Provide instruction to the deputy wardens of the posted hunting areas. Emphasis should be placed upon limit of authority in relation to road blocks, search and seizure.

5. The 13 counties which are represented in the posted hunting area system provide the bulk of the pheasant crop of Utah. Any substantial change in pheasant populations on the posted areas as indicated by hunter success, would be reflected in the total pheasant population of the state. Therefore, it is believed that the information included on the questionnaire card (Exhibit 2) which provides a breakdown of hunter success could profitably be included on the back of the Posted Hunting Area Permit (Figure 2). This permit could then be returned to the posted hunting area

checking stations and subsequently returned to the Utah State Fish and Game Department. The expense of addressing and mailing separate harvest information cards to the hunters at the end of the season would be eliminated. Also, more reliable data would be obtained as the information of hunter success on the area would be readily recalled by the sportsmen; such is not true under the present system whereby the sample of hunter information must be delayed until permit stubs are returned to the Utah State Fish and Game Department.

6. Allow a greater number of hunters to utilize the posted hunting areas, particularly in those counties in which areas are concentrated, i.e. Box Elder, Cache, and Utah counties.

7. It is recommended that deputy wardens and persons who operate checking stations remain on duty during the legal hunting period of the pheasant season.

8. Inaugurate a program of habitat improvement for pheasants on posted hunting area lands. The cost is to be borne by the posted hunting area organization and the program to be supervised by game management personnel.

9. Develop a reliable method to determine the number of hunter permits to be sold by each posted hunting area. This method should be based on the hunter carrying capacity of the land and not on the number of hunters desired by the landowners on their lands.

10. Conduct further study of the posted hunting area system to analyze the feasibility of creating posted hunting areas on all lands which are regarded as pheasant habitat of Utah.

CONCLUSION

The system of pheasant posted hunting areas in the State of Utah is, from the viewpoint of the landowner, highly successful. It provides a measure of protection against indiscriminate trespass and subsequent damage to property and livestock. Any effort to discontinue the organizations will be met by objections from the landowners.

The objectives, as outlined by the Utah State Fish and Game Department, have been partially achieved. Protection is afforded the landowner but pheasant protection and propagation is limited to a minor role. Principles of game management are generally not considered when determining the number of hunter permits to be issued for the posted hunting areas. The number of permits is arbitrarily chosen by landowner members and is based on the hunter density desired.

Hunter approval of the posted hunting areas has not been adequately measured by this study; however, 16 percent of the hunters utilizing posted areas return to the same area each season. This indicates that the posted hunting area system is approved by the "repeating" hunters. Many posted hunting areas do not allocate any part of the money received from sale of permits to improve the area as a pheasant management unit. The landowner members are, in part, capitalizing on a game resource of the state by charging a fee for the privilege of hunting on the area. Since none of the funds are used to improve the status of the pheasant on these areas, such areas receive justifiable criticism from sportsmen.

There was an unequal distribution of hunters on posted hunting areas as compared with lands not included within the posted areas. Comparative hunter density per acre of land was 2 times as great on non-posted lands as on posted lands. Therefore, information of the hunter carrying capacity of the pheasant habitat is desirable to determine if an equitable distribution of hunters on posted and non-posted lands exists.

The current trend in the establishment of posted hunting areas indicates that most of the desirable pheasant habitat in Utah will eventually become incorporated into the posted hunting area system. This fact becomes apparent when it is recognized that: (a) pheasants in Utah are usually limited to the irrigated land, (b) farmers own or control the irrigated lands of the state on which the sportsmen hunt, and (c) trespass abuse and damage to landowners' property by hunters can be controlled by the creation of posted hunting areas.

SUMMARY

1. This study was undertaken in 1952 to determine the status and management of the posted hunting areas of Utah and their relationship to the pheasant harvest for the state.

2. Management and organization of the posted areas was determined by personal interviews, supplemented by questionnaires, with representatives of the areas. Harvest information was obtained by hunter permit returns, harvest cards mailed to hunters, and mimeographed questionnaire cards distributed directly to the posted hunting areas.

3. The boundaries of the 53 posted hunting areas are usually confluent with the boundaries of the wards of the Church of Jesus Christ of Latter Day Saints. Organizations, composed of landowners, were sponsored by the Church, the Lions Club, the Young Farmers Association, Junior Chamber of Commerce, and Wildlife Federations.

4. The main objective of the landowners in establishing posted hunting areas was to eliminate or effectively control trespass abuse.

5. Officers of the posted hunting areas were usually elected by a simple majority; however, 3 areas received appointments from the bishop of the local L. D. S. Church.

6. All posted hunting areas in Utah encompassed more than 1,000 acres of land. Only 4 posted hunting areas have been discontinued since the establishment of the first area at Corinne in 1939.

7. The number of hunter permits to be sold for a specific posted area was based solely on the hunter density desired by the landowners.

8. A maximum of 5 hunter permits were reserved for each landowner member of the posted hunting area. The permits were sold to whomever the landowner desired. More than 16 percent of all permits can be reserved in this manner.

9. In 1952, posted hunting areas distributed for sale 72 percent of the hunter permits issued them by the Utah State Fish and Game Commission.

10. Approximately 17 percent of the posted hunting areas allocated a part of the fee collected for hunter permits to pheasant management. The remaining areas applied the money to civic improvement projects as construction of playgrounds, recreation buildings, and church buildings.

11. Law enforcement was improved by the appointment of 477 deputy wardens for the posted areas in 1952. On these areas, the hunter-deputy ratio was 32 : 1.

12. Checking stations were operative and active patrols conducted during the first and second days of the harvest. On the remaining days, checking stations were generally disbanded and patrols eliminated.

13. Trespass violations tended to be minimized on areas on which an active patrol was maintained. On 20 percent of the posted areas violators were prevented from purchasing hunter permits the following season.

14. Commencing in 1923, 2,500 to 20,000 pheasants were released annually in Utah. The present policy of the Utah State Fish and Game Department is to emphasize habitat improvement programs as a means of increasing the pheasant population.

15. Winter feeding of pheasants was carried on by landowners and game management personnel. Corn, grains, and grit was supplied whenever

deemed necessary.

16. In 1952, hunters from 25 of the 29 counties of Utah utilized posted hunting areas of the state. Out-of-state hunters, predominantly from California, contributed 0.50 percent of the hunter utilization in 1951 and 0.28 percent in 1952. In 1952, 65 percent of the hunter utilization was contributed by residents of Box Elder, Cache, Salt Lake, and Weber counties. Residents of counties with a high population density as Salt Lake, Utah, and Weber counties tended to hunt in all counties in which posted hunting areas were established.

17. Hunters, in 1952, purchased permits to hunt in from 1 to 5 posted hunting areas and thereby reduced by 4.6 percent the total hunter population utilizing the areas.

18. County residents, with the exception of Salt Lake, Utah, and Weber county, tended to hunt on posted areas within the county. Residents of these counties, in 1952, utilized posted hunting areas in all counties.

19. In 1952, hunter density on the posted hunting areas was 30.9 acres per hunter which represented a 25 percent increase as compared with 1951. Comparative hunter density on lands not included within posted hunting areas was 13.12 acres per hunter in 1952.

20. The 13 counties of Utah in which posted areas are located contain 60 percent of the irrigated lands of the state. Posted hunting areas presently encompass more than 415,000 acres of land declared suitable pheasant habitat.

21. Hunters, in 1952, tended to utilize all posted hunting areas to the maximum the first 2 days of the season. The minimum utilization occurred on the third day of the hunt. On the fourth day, a slight rise

in the utilization curve occurred. The same trend was observed for hunter success. Approximately 75 percent of the season total of pheasants was taken on the first and second day of the harvest.

22. In 1952, hunter success in birds bagged per season declined on posted hunting areas as compared with 1951. The average season total on posted areas was 3.08 birds per hunter and 3.14 birds per hunter on non-posted lands.

23. Hunters who used dogs were 25 percent more successful on posted areas than those who did not use dogs.

24. On posted hunting areas of Utah, 1 of 4 hunters, in 1952, utilized the same area as in 1951. In addition, these hunters travelled an average distance of 104 miles to reach the area desired.

25. Within the past 5 years, the number and total acreage encompassed by posted hunting areas has substantially increased. An estimated 38 posted hunting areas were established since 1947 thus raising the total to 53 areas located in 13 counties of Utah.

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APPENDIX

Exhibit 1. Questionnaire submitted to pheasant posted hunting area officials, 1952

Date _____

1. Unit _____ Location _____

2. Date established _____ Reason for establishment _____

Organization

1. Number of farmer-members in posted hunting unit _____ 2. Number of acres in posted hunting unit _____

3. Officers of the posted hunting unit (1952):

President _____

Vice president _____

Secretary _____

4. Election of officers:

Method _____

Eligibility _____

Term of office _____

5. When are organization meetings held? _____

Permits

1. Eligibility of permittee _____

Are permits reserved for farmer-members of the posted hunting unit? _____ If so, how many are distributed to each? _____

2. Are hunters living in the vicinity of the posted area given preference in the purchase of permits? _____ If so, how? _____

3. Is the date of sale of permits announced? _____ Method _____

4. Method of determining the number of permits to be sold _____

5. Number of permits sold to hunters (including those issued to land-owners):
 1950 _____ 1951 _____ 1952 _____
6. Are violators prevented from buying permits the following season?

7. Expenditure of fees received from the sale of permits _____

Management

1. Number of checking stations _____. Who mans the checking stations? _____. Number of men assigned to each checking station _____. Are checking stations manned during the entire season? _____
2. Method of patrolling the area during the hunting season _____

 Number of men patrolling each day _____
3. Estimated damage caused by hunters since the establishment of the posted hunting unit _____
 Type of damage _____
4. Has damage decreased since the establishment of the posted hunting unit? _____
5. Is winter feeding of pheasants carried on by farmer-members of hunting unit? _____ Type of feed _____ What organization provides funds for the purchase of feed? _____
6. Success of posted hunting unit _____

7. Remarks and suggestions _____

Exhibit 2. Questionnaire issued by the Utah Cooperative Wildlife
Research Unit, Logan, Utah, 1952

PLEASE RETURN THIS CARD TO THE CHECKING STATION AT THE END OF THE SEASON'S HUNT				

Posted Hunting Area Permit No. _____				
Circle:				
Dates hunted	Nov. 8	Nov. 9	Nov. 10	Nov. 11
No. pheasants bagged	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
No. pheasants crippled and lost	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
Did you use a dog? Yes ____ No ____				
Remarks and Suggestions _____				

Table 10. Hunter permits issued by the Utah State Fish and Game Department compared with those sold by the posted hunting areas of Utah, 1952

Location of posted areas	Permits issued	Permits sold
Beaver Co.		
Milford	500	498
Box Elder Co.		
Corinne	800	800
Brigham City	200	199
Perry	400	373
Bothwell-Thatcher & Penrose	800	800
Howell	285	269
Fielding	250	231
Willard	1,000	867
Harper	200	200
Tremonton	600	641
Cache Co.		
Young Ward	300	176
Smithfield	225	188
Mendon	350	187
Lewiston	250	150
Newton	300	175
Benson	350	349
Wellsville	300	300
Hyde Park	250	121
North Logan	200	127
Richmond	500	335
Cove	250	126
Carbon Co.		
Wellington	3,000	1,265
Davis Co.		
Woodscross	750	500
Emery Co.		
Greenriver-Elgin	400	213
Ferron	500	246
Huntington	1,000	288
Salt Lake Co.		
Riverton	2,500	1,830
Draper	500	364

Table 10. (conc.) Hunter permits issued by the Utah State Fish and Game Department compared with those sold by the posted hunting areas of Utah, 1952

Location of posted areas	Permits issued	Permits sold
Sanpete Co.		
Centerfield	500	500
Fayette	500	179
Ephraim	150	113
Mt. Pleasant	400	177
Sevier Co.		
Venice	250	172
Redmond	500	185
Salina	600	331
Aurora	300	300
Glenwood	500	153
Tooele Co.		
Grantsville	1,000	916
Clover	200	160
Erda	700	700
Lake Point	400	400
Uintah Co.		
Randlett	300	276
Utah Co.		
Spanish Fork, Benjamin, Leland, Lake Shore	5,000	3,492
Genola	600	496
Goshen-Elberta	1,000	507
Sunset	500	500
Salem	1,200	1,200
Weber Co.		
Hooper	600	600
Slaterville	500	350
West Warren	500	421
Total	33,160	23,951

Table 11. Hunter-deputy ratio on pheasant posted hunting areas of Utah, 1952

Location	No. of deputies	No. of hunters	Ave. hunter-deputy ratio
Beaver Co.			
1. Milford	47	498	10.6
Box Elder Co.			
1. Corinne	1	800	
2. Brigham City	8	199	
3. Howell	6	269	48.1
4. Fielding	25	231	
5. Willard	9	867	
Cache Co.			
1. Young Ward	15	176	
2. Smithfield	6	188	
3. Mendon	7	187	
4. Lewiston	15	150	13.5
5. Wellsville	12	300	
6. Hyde Park	22	121	
7. North Logan	9	127	
8. Richmond	31	335	
Carbon Co.			
1. Wellington	4	1,265	316.2
Davis Co.			
1. Woodscross	16	500	31.2
Emery Co.			
1. Greenriver-Elgin	19	213	12.5
2. Huntington	21	288	
Salt Lake Co.			
1. Riverton	1	1,830	1,830.0
Sanpete Co.			
1. Centerfield	24	500	20.8
Sevier Co.			
1. Venice	8	172	21.7
2. Glenwood	7	153	

Table 11. (conc.) Hunter-deputy ratio on pheasant posted hunting areas of Utah, 1952

Location	No. of deputies	No. of hunters	Ave. hunter- deputy ratio
Tooele Co.			
1. Clover	9	160	70.0
2. Erda	4	700	
3. Lake Point	5	400	
Utah Co.			
1. Spanish Fork, Benjamin, Leland, Lake Shore	81	3,492	43.1
Weber Co.			
1. Hooper	10	600	21.1
2. Slaterville	28	350	
3. West Warren	27	421	
Total	477	15,483	—
Average	—	—	32.4

Table 12. Residence of hunters utilizing pheasant posted hunting areas in Beaver County, Utah, and location of posted hunting areas utilized by Beaver County residents, 1951-1952

County	Utilization of Beaver Co. posted hunting areas				Location of posted hunting areas utilized by Beaver Co. residents			
	1951		1952		1951		1952	
	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent
Beaver	284	79.32	413	82.60	284	99.30	413	97.40
Box Elder . . .	—	—	—	—	1	0.35	—	—
Davis	3	0.84	8	1.60	—	—	—	—
Iron	19	5.31	15	3.00	—	—	—	—
Juab	1	0.28	1	0.20	—	—	—	—
Willard	1	0.28	1	0.20	—	—	—	—
Plute	1	0.28	2	0.40	—	—	—	—
Salt Lake . . .	26	7.25	39	7.80	—	—	—	—
Sanpete	1	0.28	—	—	1	0.35	—	—
Sevier	—	—	—	—	—	—	10	2.36
Summit	3	0.84	—	—	—	—	—	—
Tooele	1	0.28	2	0.40	—	—	1	0.24
Utah	4	1.12	4	0.80	—	—	—	—
Weber	6	1.68	6	1.20	—	—	—	—
California . . .	7	1.96	7	1.40	—	—	—	—
Nevada	1	0.28	2	0.40	—	—	—	—

Table 13. Residence of hunters utilizing pheasant posted hunting areas in Box Elder County, Utah, and location of posted hunting areas utilized by Box Elder County residents, 1951-1952

County	Utilization of Box Elder Co. posted hunting areas				Location of posted hunting areas utilized by Box Elder County residents			
	1951		1952		1951		1952	
	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent
Beaver	1	0.04	—	—	—	—	—	—
Box Elder	995	46.10	1,460	42.28	995	99.30	1,460	98.58
Cache	28	1.30	61	1.77	4	0.40	18	1.22
Davis	62	2.87	74	2.14	—	—	—	—
Millard	1	0.04	—	—	—	—	—	—
Morgan	12	0.56	24	0.70	—	—	—	—
Piute	—	—	1	0.03	—	—	—	—
Rich	—	—	11	0.32	—	—	—	—
Salt Lake	251	11.62	417	12.08	—	—	—	—
Sanpete	—	—	—	—	—	—	1	0.07
Summit	7	0.32	13	0.38	—	—	—	—
Tooele	4	0.18	1	0.03	—	—	—	—
Uintah	—	—	—	—	—	—	1	0.07
Utah	5	0.23	8	0.23	—	—	—	—
Wasatch	1	0.04	—	—	—	—	—	—
Weber	781	36.19	1,376	39.86	5	0.50	1	0.06
Alaska	—	—	1	0.03	—	—	—	—
California	9	0.42	3	0.09	—	—	—	—
Idaho	—	—	2	0.06	—	—	—	—
Wyoming	2	0.09	—	—	—	—	—	—

Table 14. Residence of hunters utilizing pheasant posted hunting areas in Cache County, Utah, and location of posted hunting areas utilized by Cache County residents, 1951-1952

County	Utilization of Cache Co. posted hunting areas				Location of posted hunting areas utilized by Cache Co. residents			
	1951		1952		1951		1952	
	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent
Box Elder . . .	4	0.47	18	0.85	28	3.72	61	3.37
Cache	724	85.47	1,746	82.63	724	96.15	1,746	96.41
Davis	12	1.42	27	1.28	—	—	—	—
Garfield	—	—	1	0.05	—	—	—	—
Millard	—	—	1	0.05	—	—	—	—
Morgan	1	0.12	—	—	—	—	—	—
Rich	—	—	14	0.66	—	—	—	—
Salt Lake . . .	37	4.37	137	6.48	—	—	—	—
Sevier	—	—	—	—	—	—	4	0.22
Summit	1	0.12	4	0.19	—	—	—	—
Tooele	1	0.12	1	0.05	—	—	—	—
Utah	—	—	3	0.14	1	0.13	—	—
Weber	67	7.91	158	7.48	—	—	—	—
California . . .	—	—	3	0.14	—	—	—	—

Table 15. Residence of hunters utilizing pheasant posted hunting areas in Davis County, Utah, and location of posted hunting areas utilized by Davis County residents, 1951-1952

County	Utilization of Davis Co. posted hunting areas				Location of posted hunting areas utilized by Davis Co. residents			
	1951		1952		1951		1952	
	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent
Beaver	—	—	—	—	3	1.67	8	2.00
Box Elder . . .	—	—	—	—	62	34.43	74	18.55
Cache	—	—	—	—	12	6.67	27	6.77
Davis	—	—	183	66.54	5	2.78	183	45.87
Emery	—	—	—	—	—	—	3	0.75
Rich	—	—	3	1.09	—	—	—	—
Salt Lake . . .	—	—	81	29.46	—	—	4	1.00
Sanpete	—	—	—	—	12	6.67	11	2.76
Sevier	—	—	1	0.36	4	2.22	6	1.50
Tooele	—	—	—	—	—	—	17	4.26
Uintah	—	—	—	—	5	2.78	3	0.75
Utah	—	—	5	1.82	5	2.78	2	0.50
Weber	—	—	2	0.73	72	40.00	61	15.29

Table 16. Residence of hunters utilizing pheasant posted hunting areas in Emery County, Utah, and location of posted hunting areas utilized by Emery County residents, 1951-1952

County	Utilization of Emery Co. posted hunting areas				Location of posted hunting areas utilized by Emery Co. residents			
	1951		1952		1951		1952	
	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent
Carbon	—	—	269	41.07	—	—	—	—
Davis	—	—	3	0.46	—	—	—	—
Emery	—	—	262	40.00	—	—	262	100.00
Garfield . . .	—	—	1	0.15	—	—	—	—
Salt Lake . .	—	—	65	9.92	—	—	—	—
San Juan . . .	—	—	6	0.92	—	—	—	—
Summit	—	—	21	3.21	—	—	—	—
Utah	—	—	20	3.05	—	—	—	—
Wasatch . . .	—	—	2	0.30	—	—	—	—
Weber	—	—	6	0.92	—	—	—	—

Table 17. Residence of hunters utilizing pheasant posted hunting areas in Salt Lake County, Utah, and location of posted hunting areas utilized by Salt Lake County residents, 1951-1952

County	Utilization of Salt Lake Co. posted hunting areas				Location of posted hunting areas utilized by Salt Lake Co. residents			
	1951		1952		1951		1952	
	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent
Beaver	—	—	—	—	26	2.42	39	1.80
Box Elder	—	—	—	—	251	23.42	417	19.25
Cache	—	—	—	—	37	3.45	137	6.32
Davis	5	1.92	4	1.34	—	—	81	3.74
Emery	—	—	—	—	—	—	65	3.00
Morgan	1	0.38	1	0.34	—	—	—	—
Piute	—	—	1	0.34	—	—	—	—
Salt Lake	252	96.55	289	96.97	252	23.51	289	13.34
Sanpete	—	—	—	—	278	25.93	232	10.72
Sevier	—	—	—	—	44	4.10	138	6.37
Tooele	2	0.77	1	0.34	—	—	489	22.58
Uintah	—	—	—	—	90	8.40	97	4.48
Utah	1	0.38	2	0.67	40	3.73	115	5.31
Weber	—	—	—	—	54	5.04	67	3.09

Table 18. Residence of hunters utilizing pheasant posted hunting areas in Sanpete County, Utah, and location of posted hunting areas utilized by Sanpete County residents, 1951-1952

County	Utilization of Sanpete Co. posted hunting areas				Location of posted hunting areas utilized by Sanpete Co. residents			
	1951		1952		1951		1952	
	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent
Beaver	1	0.15	—	—	1	0.42	—	—
Box Elder . . .	—	—	1	0.16	—	—	—	—
Carbon	12	1.85	2	0.33	—	—	—	—
Davis	12	1.85	11	1.80	—	—	—	—
Juab	15	2.31	12	1.96	—	—	—	—
Millard	2	0.31	2	0.33	—	—	—	—
Piute	1	0.15	—	—	—	—	—	—
Salt Lake . . .	278	42.83	232	37.91	—	—	—	—
Sanpete	235	36.21	276	45.10	235	97.91	276	96.16
Sevier	13	2.00	6	0.98	3	1.25	10	3.48
Summit	2	0.31	—	—	—	—	—	—
Tooele	9	1.39	2	0.33	—	—	—	—
Utah	51	7.86	55	8.98	1	0.42	1	0.35
Weber	11	1.69	9	1.47	—	—	—	—
California . . .	6	0.92	4	0.65	—	—	—	—
Nevada	1	0.15	—	—	—	—	—	—

Table 19. Residence of hunters utilizing pheasant posted hunting areas in Sevier County, Utah, and location of posted hunting areas utilized by Sevier County residents, 1951-1952

County	Utilization of Sevier Co. posted hunting areas				Location of posted hunting areas utilized by Sevier Co. residents			
	1951		1952		1951		1952	
	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent
Beaver	—	—	10	0.94	—	—	—	—
Cache	—	—	4	0.37	—	—	—	—
Davis	4	2.55	6	0.56	—	—	1	0.12
Garfield	—	—	2	0.19	—	—	—	—
Iron	1	0.64	2	0.19	—	—	—	—
Juab	—	—	2	0.19	—	—	—	—
Millard	1	0.64	14	1.31	—	—	—	—
Piute	—	—	7	0.65	—	—	—	—
Salt Lake . . .	44	28.02	138	12.91	—	—	—	—
Sanpete	3	1.91	10	0.94	13	11.93	6	0.74
Sevier	96	61.14	804	75.21	96	83.07	804	99.14
Summit	—	—	3	0.28	—	—	—	—
Tooele	—	—	1	0.09	—	—	—	—
Utah	8	5.10	40	3.74	—	—	—	—
Wayne	—	—	14	1.31	—	—	—	—
Weber	—	—	6	0.56	—	—	—	—
California . . .	—	—	5	0.47	—	—	—	—
Nevada	—	—	1	0.09	—	—	—	—

Table 20. Residence of hunters utilizing pheasant posted hunting areas in Tooele County, Utah, and location of posted hunting areas utilized by Tooele County residents, 1951-1952

County	Utilization of Tooele Co. posted hunting areas				Location of posted hunting areas utilized by Tooele Co. residents			
	1951		1952		1951		1952	
	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent
Beaver	—	—	1	0.07	—	—	2	0.20
Box Elder	—	—	—	—	—	—	1	0.10
Cache	—	—	—	—	—	—	1	0.10
Davis	—	—	17	1.13	—	—	—	—
Iron	—	—	1	0.07	—	—	—	—
Millard	—	—	1	0.07	—	—	—	—
Rich	—	—	1	0.07	—	—	—	—
Salt Lake	—	—	489	32.62	—	—	1	0.10
Sanpete	—	—	—	—	—	—	2	0.20
Sevier	—	—	—	—	—	—	1	0.10
Summit	—	—	3	0.20	—	—	—	—
Tooele	—	—	967	64.51	—	—	967	98.18
Utah	—	—	17	1.13	—	—	5	0.51
Weber	—	—	2	0.13	—	—	5	0.51

Table 21. Residence of hunters utilizing pheasant posted hunting areas in Uintah County, Utah, and location of posted hunting areas utilized by Uintah County residents, 1951-1952

County	Utilization of Uintah Co. posted hunting areas				Location of posted hunting areas utilized by Uintah Co. residents			
	1951		1952		1951		1952	
	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent
Box Elder . . .	—	—	1	0.56	—	—	—	—
Carbon	—	—	4	2.25	—	—	—	—
Davis	5	2.84	3	1.68	—	—	—	—
Duchesne . . .	8	4.54	10	5.62	—	—	—	—
Juab	1	0.57	1	0.56	—	—	—	—
Piute	—	—	1	0.56	—	—	—	—
Salt Lake . .	90	51.14	97	54.49	—	—	—	—
Summit	4	2.27	1	0.56	—	—	—	—
Uintah	43	24.43	31	17.43	43	100.00	31	100.00
Utah	13	7.39	19	10.68	—	—	—	—
Wasatch . . .	1	0.57	1	0.56	—	—	—	—
Weber	6	3.41	7	3.93	—	—	—	—
Colorado . . .	5	2.84	2	1.12	—	—	—	—

Table 23. Residence of hunters utilizing pheasant posted hunting areas in Weber County, Utah, and location of posted hunting areas utilized by Weber County residents, 1951-1952

County	Utilization of Weber Co. posted hunting areas				Location of posted hunting areas utilized by Weber Co. residents			
	1951		1952		1951		1952	
	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent
Beaver	—	—	—	—	6	0.30	6	0.22
Box Elder . . .	5	0.40	1	0.08	781	39.65	1,376	50.29
Cache	—	—	—	—	67	3.40	158	5.77
Davis	72	5.70	61	4.59	—	—	2	0.07
Emery	—	—	—	—	—	—	6	0.22
Morgan	14	1.11	2	0.15	—	—	—	—
Rich	2	0.16	3	0.23	—	—	—	—
Salt Lake . . .	54	4.28	67	5.05	—	—	—	—
Sanpete	—	—	—	—	11	0.56	9	0.33
Sevier	—	—	—	—	—	—	6	0.22
Summit	12	0.95	22	1.66	—	—	—	—
Tooele	3	0.24	5	0.38	—	—	2	0.07
Uintah	—	—	—	—	6	0.30	7	0.26
Utah	1	0.08	3	0.23	1	0.05	2	0.07
Wasatch	1	0.08	1	0.08	—	—	—	—
Weber	1,098	87.00	1,162	87.55	1,098	55.74	1,162	42.48

Table 22. Residence of hunters utilizing pheasant posted hunting areas in Utah County, Utah, and location of posted hunting areas utilized by Utah County residents, 1951-1952

County	Utilization of Utah Co. posted hunting areas				Location of posted hunting areas utilized by Utah Co. residents			
	1951		1952		1951		1952	
	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent	Number of hunters	Percent
Beaver	—	—	—	—	4	1.30	4	0.87
Box Elder . . .	—	—	—	—	5	1.62	8	1.74
Cache	1	0.36	—	—	—	—	3	0.65
Davis	5	1.78	2	0.47	—	—	5	1.08
Emery	—	—	—	—	—	—	20	4.34
Juab	1	0.36	—	—	—	—	—	—
Millard	—	—	2	0.47	—	—	—	—
Morgan	2	0.71	—	—	—	—	—	—
Salt Lake . . .	40	14.28	115	27.11	—	—	2	0.43
Sanpete	1	0.36	1	0.24	51	16.56	55	11.93
Sevier	—	—	—	—	8	2.60	40	8.68
Summit	—	—	6	1.42	—	—	—	—
Tooele	1	0.36	5	1.18	—	—	17	3.69
Uintah	—	—	—	—	13	4.22	19	4.12
Utah	226	80.72	285	67.22	226	73.38	285	61.82
Wasatch	2	0.71	5	1.18	—	—	—	—
Weber	1	0.36	2	0.47	1	0.32	3	0.65
Wyoming	—	—	1	0.24	—	—	—	—